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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/044,962 | 01/15/2002 | Takeshi Funahashi | Q66581 | 3096 |

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SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3202

EXAMINER

UPRETI, ASHUTOSH

ART UNIT PAPER NUMBER

2623

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/044,962 | FUNAHASHI, TAKESHI | |
| | Examiner | Art Unit | |
| | Ashutosh Upreti | 2623 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments and Amendments

Applicant's amendment filed June 23, 2005, has been entered and made of record.

The applicant argues that Adachi fails to disclose or suggest that the energy subtraction image signal is compressed with a compressibility higher than the compressibility with respect to each of the radiation image signals. The examiner disagrees. On column 9, lines 8-11, Adachi discloses that the normal radiation image can be compressed. Then on lines 22-28, Adachi discloses that the energy subtraction image can be compressed markedly. The examiner reads "compressed markedly" as meaning greater compression than "compressed". It is presumed that the plurality of radiation images would be compressed to a degree similar to that of a normal image.

The applicant argues that Adachi fails to disclose compression processing on the plurality of radiation image signals and the energy subtraction signal. The examiner disagrees. Adachi does teach this as it shows that overall, all the images being compressed in some way. In Figure 5, by the time the images are fed into the extender (40), all the plurality of radiation images (30-33) as well as the energy subtraction images (34-36) are compressed. The fact that images 31-33 are compressed by means of using the energy subtraction images 34-36 does not change the fact that they are being compressed. Given the broad claim language, the examiner feels this interpretation is entirely reasonable. The

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applicant argues that Adachi is not compressing live images but the claim language does not include such limitations.

The above arguments relate to claims 1 and 2. Additionally for claim 2, the applicant argues that Adachi does not disclose using different compression processes on the plurality of radiation images and the energy subtraction processing. The examiner disagrees as the plurality of radiation images undergo subtraction processing as a means of compression and the subtraction images are then compressed by other means (see Figure 5).

The applicant arguments regarding claim 3 are moot, given that the examiner has maintained the rejection of claim 2.

The applicant's arguments regarding claim 4 are not persuasive. Adachi itself discloses that irreversible compression is well known in the art (Ohara is not relied upon for this). With regard to claim 4, Ohara is merely brought in to show that it is well known for users/designers of such systems to have a choice as to what sort of compression to use in different parts of their system.

The applicant's argument regarding claim 5 is not persuasive. The particular numerical value for the amount of compression is a design choice, chosen appropriate to the application. The examiner has read the number '1' as being a numerical value of compression. It is currently unclear to the examiner as to whether or not the applicant is trying to say that the number '1' means that no compression is taking place. The applicant should clarify this for the record. Regardless, choosing not to compress an image is also a matter of choice that is chosen by the designer/user according to the circumstances of the application.

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The prior art used in other rejections teach compression choices as their designers have seen to be appropriate for their specific application, and this in no way reduces the fact that numerical values of compression are a design choice. Arguments relating to claim 6 are not persuasive for similar reasons.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Adachi (U.S. Patent 5,151,795).

As to claim 1, Adachi discloses:

Obtaining a plurality of radiation image signals (column 5, line 37) representing a plurality of radiation images of an object (column 5, lines 6-8), which radiation images have been formed with several kinds of radiation having different energy distributions (column 7, line 67 to column 8, line 2). Here one image is formed with high-energy x-rays and another is formed with low-energy x-rays;

obtaining an energy subtraction image signal, which has been formed from the plurality of the radiation image signals (column 7, lines 6-8);

performing compression processing on the plurality of the radiation image signals and the energy subtraction image signal (Figure 5 shows that all the plurality of radiation images (30-33) as well as the energy subtraction images (34-36) are compressed. The fact that the plurality of radiation images are compressed by means of using the energy subtraction images 34-36 does not change the fact that they are being compressed in some way. Information from all images (30-36) is fed into the compressor 37 in some way, either directly or indirectly).

the energy subtraction image signal is compressed with a compressibility higher than the compressibility with respect to each of the radiation image signals (column 9, lines 8-11, Adachi discloses that the normal radiation image can be compressed. Then on lines 22-28, Adachi discloses that the energy subtraction image can be compressed markedly. The examiner reads "compressed markedly" as meaning greater compression than "compressed". It is presumed that the plurality of radiation images would be compressed to a degree similar to that of a normal image).

As to claim 2, it is an apparatus corresponding to the method of claim 1. Adachi discloses an x-ray image recording apparatus (Figure 1) and an image readout apparatus (Figure 2), with which the method is performed. Additionally Adachi discloses two different types of compression. The examiner notes that the plurality of radiation images undergo subtraction processing as a means of compression, and the subtraction images are then compressed by other means

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in a compressor (see Figure 5). The limitations are therefore rejected for the same reasons as in claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi in view of Ohara (U.S. Patent Application 2001/0038707 A1).

As to claims 3 and 4, Adachi as applied above discloses that irreversible compression of image signals is commonly known in the art (column 1, lines 40-41).

Adachi does not expressly disclose reversible compression.

Ohara discloses that employing either reversible compression or irreversible compression when compressing image data is commonly known in the art (e.g. JPEG, wavelet compression, etc.) (Paragraph 0223 of the detailed description, lines 3-6).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the reversible compression of Ohara with

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images of Adachi as they both deal with compression of x-ray images and the compression techniques are well known in the art.

One of ordinary skill in the art would have been motivated to do this as it minimizes degradation of diagnostic information (Ohara paragraph 223, lines 6-8).

As to claims 5 and 6, setting the compressibility of a compressing process is a design choice and is therefore unpatentable. It is considered to be a design choice as the amount of compressibility is chosen by an apparatus designer taking into account factors like desired compression losses, bandwidth capacity and apparatus cost. These factors can be varied according to specific circumstances and specifying a particular numeric value does not add to the scope of the invention.

As to claim 7, the limitations regarding irreversible compression are rejected for the same reasons as given in the rejection of claim 4 (also see examiner's response to arguments about claim 4). The term "low compressibility" is considered vague, as there is no point of reference (i.e. low compared to what?). The examiner reads it as a design choice (designer will choose appropriate value for application), given that no point of reference is given. The applicant should either give some point of reference (e.g. "second compressing process has a high compressibility") so that the subjective term "low compressibility" can be clearly understood.

Claims 8 and 9 are rejected as being design choices. See previous discussions regarding design choices.

As to Claim 10, the limitations of the claim are rejected for the same reasons as given in the rejection of claim 4.

As to claim 11, the limitations of the claim are rejected for the same reasons as in claim 7.

As to claim 12, the limitations of the claim are rejected for the same reasons as in claims 3 and 4.

As to claims 13 and 14, the limitations of the claim are rejected for the same reasons as in claims 3 and 4. The examiner notes once again that choosing to use either reversible or irreversible compression (or both) for parts of a method/system is well known in the art, as has been discussed above.

As to claim 15, the limitation of the claim is rejected for the same reasons as in the rejection of claim 7.

Conclusion

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THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashutosh Upreti whose telephone number is (571) 272-7428. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



JINGGE WU
PRIMARY EXAMINER

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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September 12, 2005